4 MeV and 12 MeV (20%, 14% and 6% cases respectively) were used. In 54% cases applicator size was 5 cm in diameter. The smallest was 4 cm (15%) and the largest 7 cm (used only in 5% cases). Treatment applicators with 0°, 15° and 30° beveled tips were used (32%, 41% and 26% cases respectively). In 60% cases no bolus was needed; 0.5 cm bolus was used in 44 cases (29%). In all treatment procedures aluminium-lead shielding plates were used, 85% of which were 0.5 cm thick. The mean thickness of irradiated breast gland was 2.1 cm between 0.8 cm and 3 cm. PTV volume (volume of tissue encompassed by the 90% isodose line) was rather small, with average volume of 42.50 cc ranging from 15.00 cc to 92.10 cc.
Conclusions: Intraoperative radiotherapy is proved to be effective, tolerable and perspective treatment procedure. The external beam course afterwards was shortened by 1 week.

OC-0478
7 years follow-up among patients with early stage breast cancer treated with single fraction IORT
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Purpose/Objective: Long term follow-up (f/u) of patients (pts) undergoing accelerated partial breast irradiation (APBI) with single-fraction (SF) intraoperative radiotherapy (IORT) following breast conserving (BC) surgery is limited. We report our institutional experience with SF IORT in early stage breast cancer with respect to local control and toxicity.
Materials and Methods: Records were reviewed for 64 consecutive pts who received SF IORT from 2002 to 2014 at our institution. Of these, 47 pts were prospectively enrolled in an institutional IRB-approved phase I-II study between 2002 and 2008. Eligible pts were ≥40 years with stage 0, I or II breast cancer measuring ≤2.5 cm without nodal involvement and were all screened with breast MRI for multifocal (MF) or multicentric (MC) disease (both exclusion criteria) (EC). 8 of the 47 pts did not fully meet eligibility criteria and declined additional surgery or radiation. The remaining 17 patients were treated per protocol guidelines between 2009 and 2014. IORT was delivered using either a 200 kV orthovoltage source or electrons to 15-21 Gy prescribed to the 90% isodose line.
Results: The median age at treatment was 61 years (range: 40-84 years). Median f/u time was 88 months (range 1 – 144 months). Two pts had an ipsilateral breast tumor recurrence (IBTR), with one not meeting EC. A third patient with EIC and nodal micrometastasis later developed an axillary recurrence. All 3 patients had declined further surgery, radiation and/or systemic therapy. Overall, 52 of 64 pts (81%) received adjuvant systemic therapy consisting of endocrine therapy (n=49), chemotherapy (n=5) and/or trastuzumab (n=1). For patients who met original protocol guidelines, the IBTR rate was 1.6% at 6 years of f/u. On univariate analysis, the following factors emerged as significant predictors of IBTR: age <50 years ($p<0.001$), pathologic nodal involvement ($p<0.001$) and lack of any adjuvant systemic therapy ($p=0.001$). There were 2 cases of isolated distant relapses, which occurred in patients who had also declined adjuvant systemic therapy. Lack of systemic therapy was the only significant predictor of distant relapse ($p=0.01$). All 64 patients tolerated IORT well with no evidence of grade III or higher toxicity.
Conclusions: APBI using IORT is an inherently desirable option for BC therapy in appropriately selected pts. Our group has an IBTR rate of 1.6% at 7 years of f/u. We conclude that adherence to appropriate clinical guidelines for patient selection and strongly advising adherence to recommendations for additional surgery, radiation and systemic therapy are critical for successful use of APBI using SF IORT.

Poster Discussion: IORT in breast cancer: Where do we stand?

PD-0479
Intraoperative radiation therapy for breast cancer with INTRABEAMÆ: minimizing cost analysis
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Purpose/Objective: In selected patients, partial breast irradiation (PBI) could be a good option for delivering radiation therapy. Brachytherapy, conformal external radiation therapy (EBRT) and intraoperative radiation therapy (IORT) are the most common therapies as PBI. Using an Intrabeam® device as IORT has been considered expensive due to the initial cost of the equipment.
The purpose of this study is to elucidate the real cost of IORT with Intrabeam® in breast cancer, comparing with conventional EBRT.
Materials and Methods: Between Jan-2013 and Nov-2014, 75 breast cancer patients were treated with IORT during conserving surgery in our institution, delivering a dose of 20 Gy, with treating times adjusted to applicator diameter. Costs were estimated with time of surgery theatre occupation, radiation oncologist, physicist and technician, fungible material, applicators and total equipment cost distributed proportionately among patients. For EBRT costs calculations, there has been included institutional fares and price for distance travelled by patients daily. Also we calculated the waiting time that could influence QoL.
Results: - For the 75 IORT patients, treatment time was registered by the device software, with an average of 24.66min (15.97-49.07min), meaning an added cost of 327.46€ (212.04-651.6€). Equipment total cost proportion was 1600 €/patient. Adding staff time and fungibles, the average total cost of the procedure has been 2398.45€ (2283.03-2722.6€). For the whole series, the total estimated cost has been 201123.75€.
- The average 75 EBRT cost per patient was 3980.43€, with a total cost of 298532.25€ for the 75 patients. Considering daily patient routes twice a day, 25 days, total cost will be increased to 299376.45€, being a more realistic approach.
- For the 75 patients treated with Intrabeam®, 98252.70€ have been saved, comparing with equivalent EBRT.
Investigating daily waiting time during EBRT, we have compared the difference between the daily treatment appointment time and the real treatment time in 12 random patients of the previous year. We found an average daily delay of 15.9min/patient, that means a total waste of 6h and 37min/patient for the whole treatment and a total of 497h for the 75 patients. As personal cost, the whole group had employed more than 20 days waiting to be treated with EBRT.
Conclusions: Despite of the apparent high cost of equipment needed, IORT with an Intrabeam® device presents an